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THE MEDICAL JOURNAL OF AUSTRALIA.

VOL. I.—6TH YEAR. SYDNEY: SATURDAY, MAY 17, 1919. No. 20.

TROPICAL AUSTRALIA AND ITS SETTLEMENT.

By A. Breinl and W. J. Young.

(From the Australian Institute of Tropical Medicine, Townsville.)

(Continued from page 382.)

Unfortunately the whole question of the protein requirement of man is still unsolved. Atwater's standard of 125 grammes of protein a day and Chittenden's standard of about 60 grammes are both accepted by various workers, and recent experiments of Hindhede have shown that nitrogen equilibrium can easily be maintained upon a much lower amount of protein, provided that the diet contains sufficient calorific value. He himself maintained nitrogen equilibrium on 32 grammes of protein for 150 days. The question is further complicated by the necessity of accessory food products and their relation to the different constituents of the food, about which we are as yet in almost complete ignorance.

The protein metabolism has been further studied by the examination of the various constituents of the urine, since the final products of its degradation are excreted in the urine. Eijkman found that the urine of Europeans living in the East Indies did not differ appreciably from standards in Europe. He found the average volume for twenty-four hours as 1,442 c.cm., the specific gravity 1.017, whilst the average nitrogen content was 13.04 grammes. In the physiological text-books the average for Europe is generally given as 1,200 to 1,500 c.cm., with a specific gravity of 1.015 to 1.025 and a total nitrogen content of 14 to 18 grammes. He allowed for 1.6 grammes of nitrogen lost in the sweat and concluded therefore that an acclimatized European passed as much nitrogen in his urine as he did in Europe.

Other observers, such as Wick, Ranke and Neuhauss, however, found that the urine is much more concentrated. Observations in this respect, extending over some time, have been made in Townsville by Young (1919). A number of urine samples collected during the hot months have been examined in this Institute and the average figures were obtained for the daily urine of twenty-five persons, some of whom were engaged in manual labour and others followed a sedentary occupation. The averages calculated are given in the table 4 together with European standards:—

TABLE IV.

	In Townsville.	European Standard.
Quantity	782 c.cm.	1,500 c.cm.
Specific Gravity	1.025	1.015 to 1.020
Total Nitrogen	10.4 grm.	16 grm.
Sodium Chloride	7.00 grm.	15 grm.
Phosphates	1.73 grm.	2 to 3.5 grm.
Freezing Point	—0.935° to —2.259° C.	—0.87° to —2.71° C.

These observations reveal decided differences. The volume was much lower and the specific gravity higher. The total nitrogen, too, was smaller. The most striking difference lies in the quantity of sodium chloride, which may be accounted for by the increased quantity of sweat lost, which carries with it sodium chloride. Estimations of the amount of water lost from the skin during exercise in Townsville have yielded interesting figures. After a brisk walk of about seventy minutes with an external temperature of 24.4° C. (76° F.) wet bulb, as much as 1,100 grammes in weight have been lost. As the subjects of these experiments were weighed in their clothing this figure only represents the water which had actually evaporated. Samples of sweat carefully collected contained from 0.1 to 0.3 gramme of sodium chloride per 100 c.cm., and the cutaneous excretion would account for several grammes of sodium chloride in the above experiment. The nitrogen lost in the sweat can only be small and is almost negligible, since samples of sweat only contained 0.03 to 0.04 grammes per 100 c.cm.

The urine measured during the cold weather averaged a higher volume, 1,357 c.cm., a lower specific gravity 1.019, and an increased salt content, 9.44 grm. per day.

The total nitrogen in the urine in Northern Australia was decidedly below the European standard, even considering that a small amount (1 to 2 grammes per twenty-four hours) may leave the organism by way of the skin. There is thus an indication of a decrease in the amount of protein metabolized. Whether this is due to a smaller intake of food brought about by a want of appetite during the hot weather, so commonly observed, or whether other factors came into play must be left an open question.

(f) Effect of a Tropical Climate on the Nervous System.—In many of the writings on health and disease in the tropics attention has been drawn to the frequent occurrence of a mental condition resembling neurasthenia, of the same type as that found in temperate climates. It occurs mostly amongst Europeans, women and men, after a prolonged residence in the tropics, and is referred to in the literature as tropical neurasthenia. In its mildest form it manifests itself in a lability of the mental equilibrium, fits of depression alternate with states of exuberance; unwarranted irritability over trifling matters is hardly ever absent, leading to uncontrollable outbreaks of temper. It is associated with a loss of mental activity and power of concentration, lack of confidence and failing memory, all of which cause a decreased working capacity. The realization of this state and the futile attempts to overcome it by increased spurts of energy tend to exaggerate the trouble. This condition may be stationary for a long time, influencing the career of the sufferer, or may get steadily worse and lead to a condition termed by Plehn "tropical fury" (*Tropen Koller*), which often explains the committal of deeds of violence in an outburst of uncontrollable passion.

Amongst others Fales (1907) has drawn attention

to the occurrence of neurasthenia amongst men and women after a residence of a year or more in the Philippines, which in women is often associated with disturbance of menstruation and of the vasomotor system. In his opinion it is in most instances not directly attributable to parasitic invasions, but to climate only and forms one of the chief drawbacks to acclimatization. Woodruff made the same observation in the same locality, and attributed the condition entirely to the effects of tropical light.

In 1913 the Society of Tropical Medicine devoted a meeting to the discussion of this subject, at which the President, Sir Havelock Charles, delivered an introductory address on "Neurasthenia and its bearing on the decay of northern peoples in India." He discussed the occurrence of "Punjab head" in Bengal, which is characterized by shortness of temper, forgetfulness, sleeplessness and disinclination to work, etc., which corresponds to tropical neurasthenia. Similar "heads" occur throughout India and other parts of the tropics, and affect Europeans after having lived in the tropics for a considerable period without furlough. In a number of cases, according to Havelock Charles, tropical disease may be held primarily responsible for the condition, but in many instances he considers climate alone as the root of the evil. Since, "the constitution of the northern races is developed in temperate latitudes" he believes "that its powers are injuriously affected by the climatic conditions of the hot zone, and this must be attributed to damage done mainly to the nervous system by a hot and humid climate." Unfortunately his address and a great deal of the discussion which followed, were marred by statements which were merely expressions of personal opinions, collected during a shorter or longer residence in the tropics, and often coloured by prejudice; actual data in support of these opinions were sadly lacking.

Basil Price (1913), who for many years examined the causes of invaliding home of members of the Church Missionary Society, found that neurasthenic conditions were the cause of 25% of invalidity in most countries.

A perusal of the general literature on the tropics confirms the fact that a complaint similar to neurasthenia is very prevalent amongst Europeans who have emigrated to the tropics, but it is difficult to gauge how far climatic influences alone may be held responsible, or what part is played by the altered conditions and habits of tropical life. The novelty of the strange environment often leads to an increased output of energy and it is only after a time that the newcomer realizes his energy capacity under the new conditions and begins to husband his strength, but often too late to avoid paying the penalty.

It is, however, beyond doubt that the monotony and discomfort of life and climate, the lack of pleasure and excitement, the big distances from the centres of civilization and, in women especially, the confinement to the house during the hot hours of the day, all help towards producing a mental condition resembling neurasthenia.

(g) Clothing in the Tropics.—The degree of bodily comfort in the tropics, in the same way as in a cold climate, is governed by a number of factors, many of which may be modified artificially. In a cold climate bodily comfort is attained by conservation of heat, in a hot climate by the allowance of a maximum amount of cooling and the clothing is a very important factor in this respect.

The literature contains numerous accounts of experiments and suggestions on the most suitable kind of clothing for a tropical climate. The aboriginal inhabitants possess a dark pigmented skin and, theoretically, therefore, a dark coloured garment, allowing of ample ventilation, would appear to be the ideal, since it would imitate nature. Practice, however, does not bear out this assumption. It has been shown that a dark skin absorbs heat rays to a greater extent than does the white skin; its temperature, therefore, rises more quickly and the sweating mechanism is brought into action earlier and the cooling due to evaporation is more effective. A dark dress material absorbs heat in the same way as a dark skin, promotes perspiration, but at the same time acts as an obstacle to the free evaporation of sweat from the skin. There is between the skin and the clothing a space filled with stagnant air, which in fact contains more moisture than the surrounding air, on account of insufficient ventilation. In consequence, the dress material becomes more and more impregnated with moisture and the meshes of the fabric clogged with water and the degree of saturation of the air space between skin and clothing exaggerated. Young has recorded observations in North Queensland upon the temperature between skin and shirt—"skin-shirt temperature"—which confirm and amplify Hill's (1914) previous experiments in the same direction, which were carried out in England. Wet and dry bulb thermometers were used, the bulbs of which were encased in wire cages to prevent contact. The temperatures thus observed were invariably several degrees higher than the outer temperatures. Hill's observations, made during an English winter, showed figures as high as those recorded in North Queensland, but his subjects wore heavy clothing, suitable to winter conditions in Europe, whereas Young's subjects only wore a thin shirt. This is a clear proof that the quantity of clothing and the nature of the material is of paramount importance in determining the condition of the air surrounding the skin. The former does not require any further explanation; the latter, however, the nature of the material, may be further discussed here. It should possess two properties, firstly, that of absorbing moisture and allowing of a maximum surface for speedy evaporation—the difference between woollen, cotton and silk material is well known—and, secondly, it should prevent, as far as possible, penetration of heat waves.

Attempts to obain this objective have been made by several workers, who experimented on the suitability of material of various colours for tropical use. This question has been discussed by Sambon (1907), who based suggestions upon experiments carried out by Baly upon the penetration of rays from an electric arc through a piece of dark pigmented skin derived from an Indian. Baly photographed the spectrum after passage of the rays through the skin and noticed that rays of shorter wave length than 3,600 $\mu\mu$. (ultra-violet) were entirely absorbed, proving thus that the skin pigment excludes the ultra-violet rays. From these observations Sambon suggested that, for tropi-

cal use, material coloured black, red or orange should be used, colours which eliminate the rays of short wave length. As all these colours absorb heat rays, he suggested at first a combination of white outer garments and coloured underwear, the former to reflect heat rays, the latter to exclude actinic rays. Later he suggested the manufacture of a special material, combining both advantages, and this has been put on the market as "Solaro." This fabric is composed of white and suitably coloured threads, woven in such a way as to present a warp (upper surface) of white and a weft (under surface) of orange, red or black, and it has been proved by spectroscopical examination to be as impervious to actinic rays as the black skin.

Schmidt (1909) suggested the wearing of loose garments made of either thick light-coloured or thin dark-coloured material and recommended the use of material similar to that suggested by Sambon.

The practical test of coloured underwear, however, has not proved it to be advantageous. Phalen (1910) conducted experiments on a large scale on soldiers in the Philippines. He supplied five hundred soldiers with orange-red underwear and compared their well-being in the course of a year with another group wearing white underwear. He compared body weight, the number of red cells and hæmoglobin, blood pressure, pulse and respiration rate, body temperature and incidence of sickness in both groups. He found that the men wearing orange-red underwear showed changes due to heat, such as loss in body weight and hæmoglobin and decreased blood pressure, more marked than the control group. Phalen concluded from his experiments that the coloured garments were more receptive to heat rays than were the white, since wearers complained persistently of greater heat, greater weight and increased perspiration and expressed the opinion that khaki clothing alone affords the same protection from chemical rays as the special underwear.

The question of clothing in the tropics has been dealt with from a more common sense point of view by Gibbs (1917). "Clothing which in the sun will cast a shade upon the body without hindering the air circulation and heat radiation will be the most desirable, and if a colour is used which will give a minimum of heat absorption, the efficiency is increased. This ideal condition is fulfilled by the umbrella and it is evident that a large white umbrella lined with a material of a colour agreeable to the eyes, for example, a shade of green, will be most efficient." He states that, since custom prescribes that the man shall cover his body, this mode of "clothing" is in fact impracticable and substitutes for the umbrella a large brimmed helmet, casting a shadow over the back, shoulders and chest, and a loosely fitting white suit of material as thin as possible.

Judging by our own experience, the wearing of light-coloured suits of porous material assures the maximum amount of comfort possible, but it is obviously impossible for a labourer to wear white clothing at his work. In North Queensland he wears, as a rule, khaki-coloured trousers and a thick, dark-coloured flannel shirt, which prevents the sun's rays from penetrating to the skin and absorbs perspiration and thus allows a maximum degree of evaporation of the sweat.

On the whole, an extended inquiry amongst the residents in tropical Queensland has revealed such a diversity of opinions as to what type of clothing is the most comfortable that it appears presumptuous to lay down definite rules. Many prefer cotton for underwear, others pin their faith on wool, but all agree on the one point that outer as well as under garments should be as porous and as light in weight as possible.

(4) Summary of Physiological Changes of the White Man in the Tropics.

A review of the known facts concerning the physiological changes of the white man, transplanted to the tropics, is from a scientific point of view disappointing. Throughout the literature published since the begininng of the last century many scrappy attempts have been made to obtain evidence in this respect; figures have been collected and experiments on metabolism and other physiological functions have been performed. In spite of the energy expended, the results are not conclusive; firstly, on account of the smallness of the number of observations recorded by the different individual observers, too small to eliminate individual variation and error; secondly, on account of the uncertainty of the generally-accepted standards which may be considered normal for a temperate climate. The question of body temperature is a case in point. Several observers formed their conclusions by accepting 37° C. (98.6° F.) as a normal body temperature and considering even a small rise above this as an indication of an increase in body temperature in the tropics. If a series of observations had been taken on a few subjects at intervals during the day and night, and the average calculated, discordant results would have been the outcome, even in Europe.

The same criticism applies to experiments regarding other physiological functions, as, for example, the total metabolism as measured by the gaseous exchange. As already pointed out, a great deal of work has been attempted in Europe and recently on a much larger scale than hitherto in the large nutrition laboratories in the United States. In spite of these concentrated and intensive efforts, as Benedict has pointed out, no definite unit for the comparison of the metabolism of normal individuals has been discovered and there does not exist at present a definite knowledge of the factors influencing individual variations.

Such changes as have been noted, have been of a qualitative, but not of a quantitative, nature. Thus, with regard to maintenance of body temperature under tropical conditions, no evidence could be found in support of the view that heat, generated by internal combustion, is reduced in order to regulate the body temperature; even under the altered conditions the body still relies on physical means for this purpose. As convection and radiation of the body are greatly decreased with the high temperature, cooling must be brought about to a much larger extent by sweating and evaporation than in a temperate climate.

Again, the increased loss of fluid from the body by the skin is accompanied by a decrease in the quantity of the urine voided. As the sweat contains sodium chloride, an increased amount of this salt must be lost through the skin, which in its turn again leads to a decreased amount of salt excreted in the urine.

Blood examinations performed on a large scale have not proved the occurrence of a tropical anæmia as such, since the figures for hæmoglobin and for the formed elements do not show a definite decrease. There is a certain alteration in the percentage of the various types of white blood corpuscles and in the number of cell fragments in the polymorphonuclear neutrophile leucocytes, showing that the percentage of "young leucocytes" in the circulation, that is, leucocytes containing a smaller number of nuclei or nuclear fragments, is larger than in a temperate climate. This is expressed in hæmatological language as a "shift of the Arneth index to the left." The significance of this change is, however, not clear, but at any rate does not seem to indicate a decreased power for resisting disease, as supposed by the Philippine observers.

The consensus of opinion gleaned from experiences in various parts of the tropics seems to indicate that living in the tropics affects the nervous system and that neurasthenia seems to be more prevalent than in a temperate climate. It is, however, impossible to obtain definite figures and data, and most statements are only based on personal experience. In the light of this it would be interesting to ascertain whether a detailed examination of the functions of the nervous system would reveal any definite alterations, which, on account of their frequent incidence, would have to be considered an outcome of life in a tropical climate.

It appears, therefore, possible that a closer study of the functions of central and peripheral nervous system might reveal definite alterations. It would be advisable to obtain figures for the promptitude and quality of the response given by the nervous system to various stimuli. Reaction times and responses to different stimuli are quantities readily capable of exact measurements by means of generally used apparatus.

An extensive investigation into the mental activities in general would perhaps yield figures of definite value. The testing of a great number of individuals in the tropics on similar lines to those applied in choosing aviators would be very interesting. The applying of the Binet-Simon test for mentality to a great number of school children, again, would furnish figures of definite value for deciding the presence or absence of racial degeneration. In the mentality tests the methods are rough and only a very large number of tests, sufficiently large to eliminate personal error on the part of the observer and to minimize the influence of a few feeble-minded children, would yield figures of value. In short, all the efforts to detect physiological changes due to living in a tropical climate have not yielded definite results. It would, however, be premature to conclude that such changes do not exist and it is possible that the advent of refined methods and more sensitive apparatus may in the future demonstrate definite alterations.

White Settlement in Tropical Australia.

(1) General Conditions and Statistics.

When comparing tropical Australia with other countries situated in the torrid zone, it becomes apparent that northern Australia occupies a somewhat unique position from more than one point of view. On the whole, the general conditions of a tropical country are modified to a much greater extent by climate *per se*, meaning seasonal incidence and degree of rainfall, than a country within the temperate zone. With the exception of a wet belt on the Queensland coast, mentioned previously, the rainfall is limited to a few months in the year and during the remainder of the year at the most an occasional light shower disturbs the monotony of sunshine and during about seven months of the year the weather conditions correspond to the "dry tropics." Vegetation, which is luxuriant during the wet season, dies down and the green of the countryside gives place to a uniform brown. The shrivelled up undergrowth is often consumed by bush fires, which are said to be sometimes started by an accidental focussing of the sun's rays and which sweep for miles over the country, leaving only the trees standing, bare of their bark.

Many phases of insect life, which are dependent on vegetation and moisture, die down during the dry months, only to become all-pervading again as soon as the rains start. These changes are more marked inland than on the coast, since many of the inland districts have a very small rainfall and the hot winds arising from the barren desert of central Australia cause the inland plains of northern Australia to approximate to a typical "'desert type" of climate, with cold nights and scorching hot days.

The great bugbear of northern Australia is the common occurrence of droughts, lasting for months and even years, when the whole country is baked by a pitiless, blazing sun and becomes denuded of all vegetation, the ground for hundreds of miles showing hardly a blade of grass.

Another respect in which northern Australia differs from other tropical regions is the sparcity of the aboriginal population. The natural conditions of northern Australia seem to militate against a large aboriginal population and the natives have never evolved beyond the nomad state and have for an unknown reason never made any attempt towards settlement. The uncertain food conditions, aggravated by droughts, have helped to keep down their numbers. After the arrival of Europeans, the inability of the aboriginals to change their nomadic habits has led to a decrease in their number and has prevented them from living alongside the white man. In consequence, in any part where a large white population exists, the black man has become extinct.

The white population is still very scanty and is mostly concentrated in a few towns which are long distances apart.

The climatic conditions, especially the small and erratic seasonal rainfall, in conjunction with the scarcity of population, have created the unique position which northern Australia holds to-day. The long dry season influences the insect life and those tropical diseases which are tranmitted by certain insects, such as the mosquito, are apt to show a corresponding seasonal incidence and are to a certain extent kept in check. Other diseases, such as infectious and contagious ailments, are in a similar way kept down by the sterilizing action of the sunlight, which may kill the virus before it can spread over large and scantily populated areas.

The contention that the prevalence of certain diseases is favoured by larger and more evenly dis-

tributed rainfall is borne out by the fact that in districts situated within the wet belt a greater incidence of certain diseases is observed. Various fevers, such as endemic glandular fever, other scrub fevers of unknown ætiology, which are most probably insect-borne, occur throughout the wet belt, but are absent from other drier districts. In the same way hook-worm disease is far more prevalent in those places where the rainfall is higher and is, as far as our present experience goes, practically absent from other districts showing similar local conditions but a smaller and strictly seasonal rainfall.

The effects of climate and surroundings upon any race finds a clear expression in the vital statistics, such as birth and death rates, infantile mortality rates and expectation of life.

The statistical data for North Queensland and northern Australia have not been published separately for comparison with similar statistics for the rest of Australia; moreover, it is impossible to obtain definite data as to the number of inhabitants in Australia, since the last census took place in 1911, and the population of northern Australia is of a migratory character; any figures obtained are therefore only of approximate value. The Commonwealth Statistician, Mr. G. H. Knibbs, C.M.G., was able to supply information which throws light upon this question and has kindly given permission to include his statements in the present publication.

The area and population of the tropical portion of the Commonwealth are shown in the following table:—

AREA AND POPULATION OF THE TROPICAL PORTION OF AUSTRALIA.

Tropical Portion of—	Area in Square Miles.	Population (Exclusive of Full-blooded Aboriginals) at Census of—			
		1881.	1891.	1901.	1911.
Northern Territory	426,320 ..	3,451	4,898	4,096	3,310
Queensland	359,000 ..	56,041	108,986	145,982	157,112
Western Australia	364,000 ..	661	3,711	4,664	4,998
Total	1,149,320 ..	60,153	117,595	154,742	165,420

These figures relate to all that portion of the Commonwealth which lies to the north of the Tropic of Capricorn. For the tropical portions of Queensland and Western Australia population figures are available at the date of a census only. For the Northern Territory they are compiled quarterly and the returns for December 31, 1917, give a total of 4,908—an increase of 1,598 since the census of 1911.

At the census of 1911 the total population of Queensland (exclusive of full-blooded aboriginals) was 605,813, so that at that date the tropical population of Queensland represented rather more than 25% of the total. It also represented about 95% of the total tropical population of Australia. It might consequently be presumed that any unhealthiness of tropical Australia would have left its impress on the vital statistics of Queensland. That this is not the case is clearly shown from the following comparison of the Queensland death rates per 1,000 of population with those for the Commonwealth as a whole:—

COMPARISON OF QUEENSLAND AND COMMONWEALTH DEATH RATES, 1906 TO 1917.

	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.
Queensland	9.50	10.31	10.26	9.70	9.71	10.65	10.96	10.39	9.97	11.00	11.09	9.64
Commonwealth	10.92	10.99	11.07	10.33	10.43	10.66	11.23	10.78	10.50	10.66	11.04	9.80

It will be seen that in ten out of the twelve years under review Queensland recorded a lighter death rate than the Commonwealth as a whole and that in one of the other two years (*viz.*, 1916) the difference was inappreciable. The remaining year (1915) was that in which Queensland suffered from the most severe drought even known there, while the greater part of the remaining Sates experienced normal conditions, having suffered from drought in the preceding year.

Another test of salubrity often applied is that derived from a comparison of the deaths of infants under one year of age with the total births. The rate so deduced (*i.e.* the number of deaths of infants under one year of age per 1,000 births) is what is generally known as the "infantile mortality." A comparison of the Queensland results with those of the Commonwealth as a whole for the past twelve years is furnished in the following table:—

COMPARISON OF QUEENSLAND AND COMMONWEALTH INFANTILE MORTALITY, 1906 TO 1917.

	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1916.	1917.
Queensland	74.68	77.65	70.67	71.50	62.90	65.36	71.73	63.35	63.93	64.33	70.27	53.87
Commonwealth	83.26	81.06	77.78	71.56	74.81	68.49	71.74	72.21.	71.47	67.52	70.33	55.91

In every one of the twelve years under review the infantile mortality of Queensland was more favourable than that of the Commonwealth as a whole. Further, in both the foregoing tables the comparison has been between Queensland on the one hand and the Commonwealth, inclusive of Queensland, on the other. A comparison between Queensland and the Commonwealth exclusive of Queensland would have given results even more favourable to Queensland than those deduced above.

In the absence of complete data in respect to the population and mortality of the tropical parts of Australia it is impracticable to carry the test further, but the figures given above indicate that the vital statistics of the Commonwealth furnish no evidence of lack of salubrity in those parts. On the contrary, the State having 25% of its population within the tropics and containing some 95% of the tropical population of the Commonwealth, has a record for general and infant mortality much more favourable than that for the Commonwealth as a whole. It may be noted that practically the whole of the State of Queensland lies in the north of the twenty-ninth parallel of south latitude.

Striking as the foregoing Queensland figures are in comparison with those for the whole of Australia, an even more telling result is obtained by comparing them with those of some of the leading European and other countries. (See page 400.)

Country.	Year.	Death Rate.	Rate of Infantile Mortality.
Queensland	1913	10.4	63
Commonwealth	1913	10.8	72
Netherlands	1913	12.3	91
Denmark	1913	12.5	94
Ontario (Canada)	1913	12.7	117
Norway	1913	13.2	65
Sweden	1913	13.6	70
England and Wales	1913	13.8	108
U.S.A. (registration area)	1913	14.1	*
Switzerland	1913	14.3	96
Belgium	1913	14.8	120
Germany	1913	15.0	151
Scotland	1913	15.5	110
Ireland	1913	17.1	97
France	1913	17.7	98
Italy	1913	18.7	137
Japan	1913	19.5	150
Austria	1913	20.5	180
Jamaica	1913	21.7	171
Spain	1913	22.1	*
Hungary	1913	23.3	186
Rumania	1913	25.9	202
Ceylon	1913	28.4	189
Chile	1913	30.1	255

* Not available.

In addition to the foregoing, it may be pointed out that the mortality experience of Queensland has been continuously improving, both absolutely and also in relation to the experience of the Commonwealth as a whole. This is clearly brought out in the next table, showing the expectation of life at age 0 in each of the last three decades.

EXPECTATION OF LIFE AT AGE 0.

Decade.	Males.		Females.	
	Queensland. Years.	C'wealth. Years.	Queensland. Years.	C'wealth. Years.
1881-1890	41.330	47.199	49.754	50.844
1891-1900	49.512	51.076	55.800	54.756
1901-1910	54.203	55.200	59.294	58.837

In Mr. Knibbs's opinion local statistics relating to individual towns would not give results sufficiently reliable to warrant definite conclusions, owing to the migratory character of much of the population, and, in connexion with birth, owing to the tendency to move into the towns for purposes of confinement.

(2) Housing.

The question of the construction of suitable dwellings in the tropics has been the object of a great deal of study and controversy. A suitable tropical residence should be so constructed that the interior is protected as much as possible from the direct rays of the sun, in order to prevent excessive heating of the walls of the room and at the same time sufficient ventilation should be provided, in order to secure the quickest possible cooling of the structure. Unfortunately, in the construction of the average dwelling house in North Queensland these principles have not been sufficiently considered. The greater proportion of the dwellings of the settlers on the land are entirely unsuitable and a great number in the larger towns are far from ideal. A statement of a leading firm of architects with twenty years' experience in the north is of interest, namely, that they have never designed one cottage as they know a cottage should be designed, on account of the prejudice against the introduction of novel ideas.

The majority of the scattered habitations of the smaller settlers in north-western Queensland are built of galvanized iron on a wooden framework, without verandahs or any insulation, and the temperature of the interior during the hot hours of the day surpasses by far the outer air temperature.

The small dwellings in the towns are raised on piles and contain as a rule four rooms; they possess a narrow verandah in front and sometimes also on the side. The rooms are as a rule low and the roof is composed of galvanized iron sheets and often does not possess an inner lining. The kitchen is nearly always detached and generally consists of a small cubicle built of galvanized iron only. Most of the larger wooden houses have a verandah all round and higher rooms, with ample ventilation.

A good type of tropical house may be seen in Darwin, where many of the houses are constructed after a design similar to houses in the Far East. The verandahs are wide and are closed in by bamboo shutters, which are kept shut during the heat of the day and thus prevent the heating up of the rooms and at the same time allow of sufficient ventilation; the shutters are opened as soon as the sun gets low.

It is quite evident that a galvanized iron "humpy," without verandah, is the most unsuitable structure to reside in in a hot climate. During the day the heat is nearly unbearable and the only advantage is the speedy cooling of the walls after sundown. The larger houses, built of timber, with open verandahs, are, on the whole, suitable for the climatic conditions, if attention has been paid to several points.

The house should be raised off the ground and built on piles, in order that the air should have free access to every part of the house. It should be so placed, if practicable, that it lies in the direction of the prevailing breeze and windows and doors should as far as possible be opposite, in order to allow of the maximum of ventilation. The verandah should be sufficiently broad to protect the walls from the direct rays of the sun at any time, but the minimum width depends upon the latitude in the geographical sense. According to Schilling (1909), the houses in regions near to the equator require a verandah on the four sides, as the path of the sun is more vertical. In regions below the Tropic of Capricorn a verandah on the south side is not absolutely necessary, as the path of the sun is inclined from the north and the south side of the house is not struck by the direct rays at any time. The rooms should be spacious and with as many windows and doors as practical, for the sake of ventilation and lighting. It is only too well known that mosquitoes and other insects choose dark corners and avoid light. A roof of galvanized iron is suitable, provided that the necessary ventilation is allowed for. The roof should be slightly raised from the wall. The top gable should be provided with a ventilator and, if possible, there should be louvres on either side below the gable, to provide additional ventilation. If the roof be closed in, there is a layer of hot, stagnant air between the roof and the ceiling of the rooms, which is heated by the sun to a higher temperature than the outside air and this keeps the temperature of the rooms high after sunset.

We are indebted to Messrs. Lynch and Hunt, architects, of Townsville, whose activities extend throughout North Queensland, for the framing of the following recommendations for building small dwellings suit-

able for North Queensland and costing approximately from £200 to £600.

Apart from any further items that may be found advisable, as many of the following recommendations as the site will permit should be embodied in every cottage:—

1. Buildings should face due east and have verandahs to front and back of not less than nine feet in width.

2. In addition to other necessary openings, there should also be doors and windows so arranged in every room to allow the wind to enter on the weather side and escape on the lee side. Doors should also be arranged as to avoid the necessity of retracing one's steps to get to any section of the house.

3. Buildings should not be more than one room in depth.

4. The size of a room built under the most favourable circumstances should be regulated by the number of prospective occupants. Eight hundred cubic per head would be a fair minimum.

5. Side verandahs and excess widths to other verandahs should not be constructed at the expense of the size of the rooms. Large rooms and limited verandah space are infinitely better than small rooms and wide verandahs.

6. Blocks should be approximately 2 feet 6 inches above the ground. They should be either brick or concrete.

7. All buildings should be constructed to resist cyclones.

8. Fully exposed walls should be double sheeted and ventilated.

9. Roofs should be fitted with ventilators.

10. Ceilings should stand two feet below the top of top plates. In this connexion studding should not be less than twelve feet in length for the smallest cottage and proportionately longer for larger cottages.

11. Fan-lights should be hung immediately under ceilings.

12. Ledges and corners should be avoided as far as possible.

13. Roofs should be hipped and continuous, having eaves approximately two feet in width, to walls and verandahs.

Mr. C. D. Lynch has kindly put at our disposal a novel suggestion for building suitable houses, which would entail an expenditure of at least a thousand pounds and which scheme is the outcome of twenty years' practical experience of house designing in North Queensland. The building, the idea of which is shown in the accompanying sketch (Fig. VI.), is constructed of re-inforced concrete or brick and possesses double outer walls, with an intervening and suitably ventilated air space of about three inches, thus ensuring coolness and dispensing with the necessity of verandahs. The floor space is subdivided by wide corridors (3.5 to 4.5 metres, or about 12 to 15 feet) arranged in the form of a cross, on to which the rooms, placed at the corners of the house, open. The corridor may serve as a general living room, since it enjoys the maximum amount of ventilation, whatever the direction of the wind may be. A flat roof, surrounded by a balustrade, would, according to Mr. Lynch, add further to the roominess and comfort of the building.

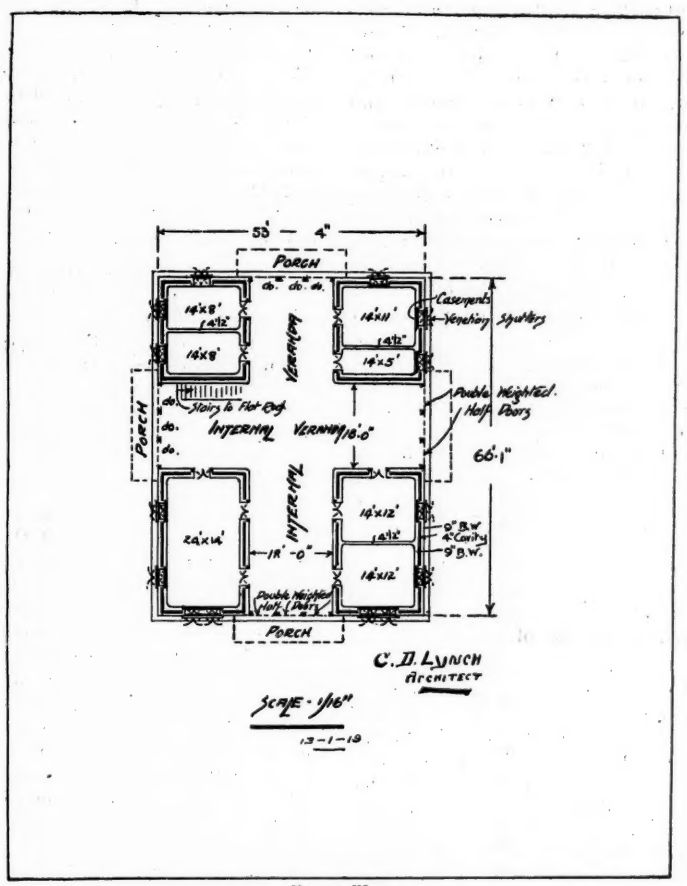

FIGURE VI.
(Reduced one half from original drawing.)

Suggestions are found in the literature for cooling houses by artificial means. Attempts have been made to circulate artificially cooled air through buildings, but in practice this method has not proved satisfactory, on account of the high initial expense of the necessary machinery and the technical skill required for its maintenance. Less costly, but at the same time less effective means, are fans run by electrical or water power; but as the majority of the northern towns of Queensland are without electrical power and as the water rate is excessive and the supply often uncertain, fans in private houses have not come into general use.

The systematic laying out of towns in tropical Australia has unfortunately been sorely neglected and most settlements have been allowed to grow up in a haphazard way. In the main streets of the larger towns ground has become too valuable to permit of an adequate space between buildings to allow free circulation of air. The main streets have often been laid out regardless of the prevailing winds. Flinders Street, the main street in Townsville, runs in the direc-

tion from north to south, the prevailing breezes blowing from south-east, and, as a result, the street has the well-deserved reputation of being the hottest corner in North Queensland. If, in the original laying out of the town, this point had been considered and a number of cross streets in the direction of the prevailing winds allowed for, a great deal of discomfort might have been spared.

General Résumé.

A consideration of the position in northern Australia at present shows evidence that the progress in North Queensland and to a still greater extent in the Northern Territory, has not been commensurate with the advance of time and with the undeveloped resources of the country. Certain townships, without doubt, have gone ahead, have increased in population and prosperity, but at the same time other towns have ceased to prosper, have decreased in population and their inhabitants have migrated to the prospering townships. It is, however, difficult to get definite figures which would illustrate this point, as the census is only taken every ten years, but the relatively small increase of the population of the north when compared with the south of Queensland during the decade between two census (1901-1911) is significant. The total increase in population for Queensland during this time amounted to 108,657 souls; of these, only 7,577 represent the increase in the north. Considering that in 1911 25% of the total population of Queensland was living in the northern division, the increase in district was relatively much smaller than in the centre or in the south. Even if figures for the last seven years could be obtained, their value for gauging the progress of the country would be doubtful, on account of conditions brought about by the war, which led to a nearly complete cessation of immigration.

The population of the Northern Territory has slightly increased lately. Even so, at the end of 1917 the total population is 4,908 and represents approximately one inhabitant to about 80 squares miles.

It is therefore obvious that northern Australia is not as favoured for settlement as the southern parts of the Commonwealth and in this connexion it was pointed out by Sir Thomas Anderson Stuart on the occasion of a meeting of the Royal Colonial Institute in 1912 that the southern and more salubrious parts of Australia were not by any means overpopulated yet and that immigrants naturally preferred to settle there than to go further afield; thus, in the course of time, they would find it an easier matter to obtain a setlement in the northern parts than in the south. It was simply a case of filling up and the rapidity would depend on the rate of immigration. A similar conclusion was arrived at by Atlee Hunt (1915) regarding the Northern Territory. "Should any new and rich mining field be discovered, the question of populating the Territory will settle itself; but in the absence of any such happening, it is submitted that the only course open is to wait until, in the natural course of things, the trend of population moves gradually northward."

It is well known that economic conditions play an important part in the settlement of any country, and especially of the tropics. There is no doubt that life in the tropics is burdened with a great deal of discomfort, due to heat and other general conditions brought about by climate. For this reason the settlement of the tropics carries with it more difficulties than settlement in a temperate climate. This is borne out in practice by the experience that, throughout the world, the white population in tropical parts is largely of a migratory character. Tropical Australia does not form any exception to this rule. Even during a comparatively short residence one notices that the population is continuously changing and that there exists a general desire amongst the inhabitants that their stay in the north shall be as short as possible, and the whole aspect of the majority of northern towns bear testimony to this. A lack of public interest is noticed everywhere and has led to putting up with makeshifts. Houses are only rarely built for comfort, as their owners hope to occupy them only for a few years. Town improvements are often only of an ephemeral character and short-sighted policies are the rule in most instances. This again is due to the unsettled mental condition of a migratory population, which is unable to concentrate on anything but the most pressing immediate needs.

Many conditions co-operate in bringing about this state of affairs. North Queensland is the most recently settled part of Australia; it is an enormous stretch of country, with comparatively few lines of communication with the centres, and consequently it has received a great lack of consideration from the centres of government. A feeling of isolation is a natural outcome and exaggerates migratory tendencies and the desire to get back to "civilization."

The hot summer naturally militates against permanent settlement, especially since the housing, lack of water, etc., do not mitigate the severe discomforts. If a person residing in northern Europe were obliged to live during a severe winter in a draughty wooden house, without artificial means of heating, a strong desire to move to a more congenial climate would be created. In the same way one could not expect a white population to thrive in the tropics unless all possible means be adopted to alleviate climatic conditions.

Many newcomers arrive in the North with a prejudice against northern Australian heat, which has been instilled into them by their southern friends and adds greatly to this discomfort. Dressed in their southern clothing they walk about perspiring, but never think that a cold day in the south, spent in a light cotton suit, would be equally, if not more, uncomfortable for the opposite reason.

In addition to climatic influences, the mode of employment in general tends to attract a migratory population. North Queensland is dependent almost entirely on raw products for supporting its inhabitants and permanent institutions, such as factories, giving employment throughout the year, are lacking.

The settler in the north has thus to face conditions which, when compared with those of a temperature climate, render life in one way more uncomfortable, although in another way less strenuous on account of the lack of competition. During the hot season work is carried out under trying conditions; the least exertion causes profuse perspiration, the degree of dis-

comfort depending mostly on the nature of the work and on the surroundings, but is well pronounced, even in people who follow a sedentary occupation. In addition, during the very hot months of the year, the continuous pouring out of perspiration during the day is not relieved by a respite during the hot night, when, although at rest with doors and windows wide open, one perspires freely and wakens up in the morning unrefreshed and more tired than one felt on going to bed.

It requires but little thought to realize that this discomfort plays a still more important part in the life of the women. Their work—domestic duties—is carried out during the hottest part of the day, indoors in the hottest part of the house and in most instances in that part which has been most neglected in construction. It is very difficult to obtain domestic help, on account of the small number of domestic servants available, whose wages are in consequence very high, demanding an expenditure which is in most instances prohibitive for a medium income. The wife of the settler on the land is in a still worse plight, as she has not only to do her own housework, but in many instances has to cook for the employees. There is, in fact, no eight-hour working day for these women.

As man is largely affected by his surroundings and the quality and quantity of his work influenced by outer conditions, it can be readily understood that a tropical climate with a hot atmosphere laden with moisture, where the discomfort following any bodily exertion is great, is not conducive to a maximum output of energy, especially if the lack of competition makes the condition of life easy. There is no doubt that climate *per se* tends to affect greatly the quality and quantity of physical and mental work. A cold climate conduces to physical activity, a warm climate to lassitude and the economic conditions are then the determining factor for the output of energy.

In North Queensland, with its enormous natural resources, its remarkable recuperating power after a series of bad seasons and its small population, the conditions of life are such that poverty is unknown and an easy living earned at a minimum cost of exertion and the rate of wages is very high.

Another factor which plays a very important part in the determination of the quality of work is the abuse of alcohol, which is rampant amongst all classes of the community. A number of factors contribute to this abuse, such as the thirst caused by the heat, the temptation to quench this thirst, owing to the great number of licensed public houses, the temporary stimulating effect of the slow poison and last, but not least, the well known open-hearted hospitality of the north, which finds its expression in "shouting."

The foregoing observations prove that in North Queensland both climate and economic conditions, namely, the lack of competition and high wages, have created a tendency in the same direction, towards a deterioration of labour, and it is impossible at present to apportion correctly the influence of either factor. It is quite probable that, in the future, when the population of northern Australia has increased and competition has become keener, the quality of labour may improve, unless in the meanwhile a definite decay of the race, due to climate, has set in. Up to the present, however, no such decay is apparent, but it must be kept in mind that in a newly-settled country, with a floating population, which, to a great extent, is maintained by immigration, racial degeneration would not make itself felt until after a somewhat prolonged period.

The "Great Experiment of White Australia" in most previous discussions has been considered entirely from one point of view, namely, the health point. It has been assumed that the possibility of a population of European descent to live, propagate and thrive in a tropical climate, alone would decide the question. In northern Australia, however, the economic conditions are of equal importance and present a problem as far-reaching in its influence as health for the permanent settlement of tropical Australia.

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Reports of Cases.

TWO CASES OF SEVERE INJURY TO EYE.[1]

By **Wallis Hoare, F.R.C.S. (Ed.),**
Brisbane.

Case I.—B.P., *æt.* 21, an apprentice engineer, was engaged on February 20, 1919, in working on a steel shaft with a hammer and cold chisel when a corner of the cutting edge of the chisel broke off and, flying upwards, struck the left eyeball. He was seen by me on March 19, when the vision with the left eye was $^6/_9$ (partly) and with the right eye $^6/_6$ (one letter). There was a healed linear vertical scar about 3 mm. long situated in the lower nasal quadrant of the left cornea. The iris was discoloured and dilated under atropine. Ciliary congestion was present; the lens was perfectly clear and evidently uninjured, as was the iris. Direct ophthalmascopy showed what was evidently a foreign body in the lower and outer segment of the vitreous at about the junction of the middle and anterior third of the eye. The magnet applied to the eye revealed a magnetic body present and an X-ray plate taken by Dr. Val McDowall showed the foreign body very well. Under local anæthesia a sliding conjunctival flap was made over the lower and outer region of the sclerotic and with a sharp Graefe knife a linear incision was made in the bare sclerotic about 5 mm. in length parallel to and between the inferior and external recti. The tip of a 110 volt hand magnet was introduced and the foreign body accompanied by a drop of vitreous drawn out. It measured 3 mm. long, 2.5 mm. broad and in thickness about 1 mm. and was of triangular shape. The eye behaved very well. It remains quite quiet, and with a plus 0.75 cylinder axis 30° downwards and outwards, the vision is $^6/_6$ all letters. From a cosmetic point of view it leaves nothing to be desired, as it is quite indistinguishable from its fellow. It is noteworthy that the iris and lens altogether escaped injury.

Case II.—R.S.H., *æt.* 18, also an apprentice engineer, on April 10, 1918, was engaged in drilling electrically a cast iron pulley wheel (about 30 cm. in diameter) when from some unknown cause the wheel broke in two, one half striking him with great force on the left eyeball. He was seen by me shortly after the accident. The vision of the eye was reduced to hand movements. There was a severe lacerated wound of the left cornea in its upper third, shaped like an inverted T. The pupil was widely dilated, the iris prolapsed into the wound, the anterior chamber collapsed and the lens nowhere to be seen. In short, on examination it looked a clear case for enucleation or evisceration. The patient, however, had other views and was firm in wishing that, if possible, an attempt should be made to save his eye. Accordingly, under local anæsthesia, I thoroughly undermined the upper two thirds of the conjunctiva round the limbus and inserted a running silk suture therein, snipped off the prolapsed iris, irrigated the anterior chamber gently with saline solution, and drawing down the conjunctival flap, already fashioned, stitched it to the unloosened conjunctiva below, so that a natural bandage might completely cover and support the corneal wound. Notwithstanding the free use of atropine and dionin some iritis resulted and the pupil gradually closed. The scar, which at first threatened to bulge and become staphylomatous, gradually healed firmly under a pressure pad and became flat. On September 3, 1918, an artificial pupil was successfully made and the eye has remained quiet and free from pain. There was no keratitis punctata at any time. Unfortunately, as one must expect in such cases, the warping of the cornea has produced about 5 D astigmatism. However, with correction he gets with the injured eye $^6/_{18}$ and J 4. With his right eye his vision is $^6/_5$.

[1] Read at a Meeting of the Queensland Branch of the British Medical Association on April 4, 1919.

A CHARLATAN FINED.

An important case was dealt with in the Prahran Court on April 29 and 30. A person of the name of Mathew Digby Wyatt, who was practising with his wife and son as "Sir M. D. Wyatt, Lady Wyatt and Son, Eye Specialists, 1 Fern Avenue, Windsor," was charged with being a rogue and vagabond within the meaning of Section 3 of the *Police Offences Act, 1919*, "inasmuch as he did, on April 5 last, impose on one Alfred Crawford by false representation with a view to obtaining money and did obtain the sum of £2."

From the evidence it appears that Alfred Crawford, formerly a bricklayer, had been totally blind for 12 months. Wyatt had issued circulars and testimonials lauding his ability as an eye specialist and claiming that he had cured persons who had been blind for 50 years. Crawford consulted Wyatt and undertook to sell his house and give him £200 if he could restore his sight. Wyatt wanted £4 4s. before he undertook the treatment, but eventually accepted £2 down, while his sister paid the balance of £2 4s. at a later date. Wyatt gave him a lotion for "cataract." It appears, however, that he was suffering from optic atrophy. In the course of the evidence a number of impudent claims made by Wyatt were related. Wyatt is 72 years of age and is not a medical practitioner. The Bench took a very serious view of the case and the chairman stated that if it had not been for Wyatt's age, he would have been imprisoned without the option of a fine. A fine of £25, with £4 15s. costs, was imposed and Wyatt was further ordered to re-pay the £4 4s. paid by Crawford, with £3 6s. costs.

PNEUMONIC INFLUENZA.

In the *New South Wales Government Gazette* No. 99 of May 5, 1919, a proclamation is published cancelling certain restrictions on the community of the municipal area of Blayney, which were imposed on April 16, 1919, on account of the outbreak of pneumonic influenza. A similar proclamation was published on May 7, 1919, cancelling the restrictions in regard to the town of Ganmain.

The Medical Journal of Australia.

SATURDAY, MAY 17, 1919.

The White Man in the Tropics

The Australian Institute of Tropical Medicine has been established for the purpose of investigating the hygienic and medical problems in the tropics. The principle has been recognized that environment, climate and physiography influence many factors connected with the living conditions of man and the lower animals. The chemistry of plant life in the tropics varies not inconsiderably from that in temperate zones, even as it is different in different parts of the same zone. We are too apt to assume that the chemical composition of food stuffs is the same in Europe as in Australia; that the same vectors necessarily carry a disease-producing organism in far separated countries; that physiological facts determined in England hold good for India and Australia. The Tropical Institute has supplied the opportunity of ascertaining the variations of life conditions from the standards set up in the old world. During the brief period of its existence Dr. A. Breinl and his coworkers have studied many problems as they appear in tropical Australia and have established once and for all time the effects of the peculiar environment, climate and other physical phenomena of northern Queensland on these problems. Some of the investigations have been concerned with purely medical questions and advantage has been taken of the physical and meteorological variations of the different districts contained in the area of Queensland lying north of the tropic of Capricorn. Other problems are more closely related to physiology and even economic questions have come under consideration. In the present issue we complete the publication of an important contribution to the much debated subject of the settlement of tropical Australia.

The White Australia question is not limited to an enquiry whether or not the white man can live in moderate comfort in the tropical regions of the Commonwealth. It is not merely a physiological problem concerning the effect of climate on the white man as compared with the black man. Neither may the matter be restricted to a consideration of a transition of a portion of the increase of the Australian population to the northern districts. These matters are of vital importance, but the future of tropical Australia does not depend on a fitting reply to them. The determining factor, after all others have been disposed of, is a psychological one. Is the white man willing to develope the rich resources of the north in a sufficiently economical manner to justify the exclusion of coloured labour? In no other part of the world has an endeavour been made to reserve the field of labour in tropical regions to white men. The experiment would not be worthy of trial unless it could be shown that the white dweller in the north is physically and mentally capable of exercising sufficient energy to guarantee a reasonable return from the natural wealth of the vast districts involved.

Dr. Breinl and Dr. Young have shown clearly and unmistakeably that while the tropical climatic conditions are often not conducive to comfort, by proper attention to clothing, housing and hygiene, it is possible to minimize the discomfort and to remove any direct harmful effect of the tropical climate on the white man. They have proved that the whole of Queensland is rather healthier than the rest of the Commonwealth under existing conditions. This aspect of the question has to be modified to some extent on account of the prevalence of hookworm disease and perhaps of sprue, but since the former, at all events, can be eradicated by properly adjusted hygienic measures, it may be accepted that the white man can live in safety of the north. They find that the health of the white settler is not impaired, except by the appearance of a form of neurasthenia. We are less inclined to pay attention to the alteration discovered in the blood cells of dwellers in the northern parts of Queensland by Dr. Young, usually spoken of as a shift in Arneth's index to the left. The presence of a tropical neurasthenia is far more significant, and if it proves to be an essential association of prolonged residence in the tropics in a considerable proportion of white men, it must be regarded as a very serious detriment to the carrying through of the White Australia policy. Apparently the most marked symptom of this neuras-

thenia is disinclination to work. Could anything be more destructive to an economical development of a vast area of productive country? We are told that in its milder forms it manifests itself in a lability of the mental equilibrium. Surely no economist would agree to build up a race on such a hopeless basis! Dr. Breinl and Dr. Young are not prepared to ascribe this neurasthenia entirely to tropical conditions, although they suggest that the environment, climate and social conditions probably lead to such an affection. They have no statistical data to offer as to its prevalence, nor are they able to give information concerning the state of the nervous system of the sufferers. The authors have rendered signal service by directing attention to this aspect of a complicated and difficult problem. Further investigation will have to be undertaken to prove whether the future development of tropical Australia, with its 1,149,320 square miles, by white labour must be rendered practically impossible by the advent of neurasthenia among the workers. If the white man's will to work is prevented by a pathological condition, this immense area must remain unproductive.

MORONS, MORALS AND MENTALITY.

The legislator and the man in the street have awakened to the fact that the public health is being undermined by widespread venereal infections. The prudery of a previous generation has been replaced by an almost crude frankness concerning the social evil and its attendant physical dangers. Measures have been introduced in every State of the Commonwealth except South Australia for the arrest of venereal infections. If these provisions are carried out in an effective manner, the prevalence of these diseases will, without doubt, be diminished to a very large extent. Excellent as these measures are, it must not be forgotten that they do not form a satisfactory prophylaxis, since they depend on recognition of infection and insistence on treatment. The anonymity of the notification precludes a search for the source of infection. The scheme does not embrace any attempt to cut off fertile fields of infection. Its effect must therefore remain limited.

We have urged on numerous occasions that the subject of mental deficiency is wholly misunderstood by legislators and the public. Certain facts stand out in terrible relief concerning the results of the arrest of development of those areas of the brain which have the function of determining conduct, impulses and emotions. In the first place mental defects of this nature are extremely common. This has been demonstrated over and over again. In the second place when an arrest of development of the brain takes place, the moral sense is more frequently disturbed than is the power of learning. In the third place a large proportion of the crimes and misdemeanours dealt with in our courts are perpetrated by individuals with arrested mental development. Lastly, if morons and mental defective children were recognized and properly controlled from an early age until death, much crime and prostitution would be prevented.

The public has recently learnt some nauseating details concerning the life, habits and death of a homosexual individual. A youth now stands on his trial for the murder of this individual. Incidentally the police found it necessary to proceed against two abnormal boys who were said to have associated with this dead moron during his life. The boys revealed unmistakable signs of mental degeneracy and yet no steps were taken to render them harmless to others. These practices are by no means uncommon. The police are aware of the prevalence of homosexuality among the dwellers in our large cities. The victims of the preverts are almost always weak-minded individuals and they inevitably become perverts themselves. Thus the snow-ball increases. Legislators are aware of the facts. Chapter and verse have been quoted to them repeatedly. And yet nothing is done to root out this intolerable evil. If our legislators refuse to open their eyes to facts and persist in their policy of inactivity, it will be necessary for the medical profession and those who have studied this aspect of psychology, to take the matter in hand and to speak plainly to the public. It is imperative for the moral safety of every young person in the Commonwealth that means shall be taken to recognize every case of moronity in the earliest detectable stage and to segregate every individual whose power of distinguishing

right from wrong is defective. Since this question is a general one, uniformity of action throughout Australia is essential. We therefore urge the Federal Government to convene without delay a meeting of experts and interested politicians from all parts to consider what steps shall be taken.

THE VIRUS OF MEASLES.

It has been assumed from the general character of the infection that the virus of morbilli invades the blood stream. Acting on this assumption several investigators, including Nicolle, Hektoen and Eggers and Lucas, have endeavoured to infect monkeys with the blood of measles patients in order that further information of a practical nature might be elicited concerning the virus. Nicolle and Conseil failed to produce more than a slight rise in temperature in a monkey by the inoculation of the blood of a patient taken 24 hours before the appearance of the rash. Other observers have claimed to have produced certain symptoms which they regarded as evidence of mild morbilli, but the results of the experiments were so doubtful that little reliance could be placed on them. Andrew W. Sellards and John A. Wentworth have recently subjected this question to a carefully planned and nicely executed test.[1] They kept a monkey under observation for one week. At the end of this time the monkey was given an intraperitoneal injection of 10 c.cm. of blood removed from a patient 18 hours after the appearance of the rash. The blood was diluted in 40 c.cm. of saline solution and defibrinated. The temperature of the monkey and the number of its leucocytes were carefully noted. As no change took place, a fresh inoculation was carried out on the sixteenth day with blood taken from a measles patient four to six hours after the first appearance of the rash. A third injection was made a day later and finally a fourth injection was given 24 hours after the third. In each case blood from a different patient was employed and in all cases the blood was withdrawn within a few hours of the appearance of the rash. The monkey's temperature remained practically normal and no leucopenia appeared. In the next place a second monkey was inoculated in a similar manner as the first and kept under observation for two months. This monkey had had an erythematous rash over the face and eyebrows before inoculation. The erythema faded at first but reappeared later. Otherwise no signs of an infection were noted. The same negative response to inoculation was obtained in a third monkey. Notwithstanding the absence of rash, conjunctivitis, rhinitis, coryza, fever and leucopenia, the authors considered the possibility that the virus might have persisted and even multiplied without producing symptoms. The third monkey was therefore bled on the eleventh day after the first inoculation and 3.5 c.cm. of its defibrinated blood were injected subcutaneously into a volunteer. Great care had been exercised in the selection of this individual, as it was of paramount importance to reject a person who had previously had morbilli. As far as could be ascertained the volunteer had not previously had either rubella or morbilli. He did not develope measles. The authors did not feel justified in proving his susceptibility to measles by inoculation with infected human blood. They regard their negative results as indicating the insusceptibility of monkeys to the virus of morbilli and the futility of employing these animals for the further study of this infection.

[1] *Johns Hopkins Hospital Bulletin*, March, 1919.

INFLUENZA IN LONDON.

Further figures from the Registrar-General are now available in connexion with the epidemic of influenza in London at the end of last year. These figures are those for the number of deaths certified from influenza, pneumonia and bronchitis. They are given for each week and are compared with the total number of deaths from all causes. For the week ending November 9, 1918, there were 2,443 deaths from influenza, for that ending November 16, 1,665 deaths, for that ending November 23, 1,177 deaths, and for that ending November 30, 942 deaths. In the eight weeks that the epidemic has raged there have been 10,383 deaths in London. The percentages of deaths from influenza on those from all causes during the six weeks ending November 30, 1918, have been 47, 57, 57, 49, 42 and 37. The deaths are still most numerous between twenty and forty-five years and the figures still show that roughly three quarters of the deaths are in those below forty-five years of age. The deaths from pneumonia and bronchitis still form 12% and 6% of the total number of deaths from all causes. The wane of the epidemic was accompanied by a return of humid and milder weather. The Registrar-General is issuing weather tables in his returns and these charts are welcomed as likely to show a meteorological relationship in respect to the virulence of the outbreak.

We have to announce the death of Surgeon-General Sir William Daniel Campbell Williams, K.C.M.G., C.B., formerly Director General Medical Services in the Commonwealth.

It is with deep regret that we have to record the death of Captain Clarence Charles Hains, Australian Army Medical Corps. Captain Hains, who was a graduate of the Sydney University, was killed in an explosion which took place accidentally at a munition dump at Charleroi, Belgium, on April 14, 1919.

Dr. J. C. Verco has been appointed a member of the Senate of the University of Adelaide, to occupy the seat rendered vacant by the death of Sir Edward Charles Stirling.

We understand from the public press that there are three applicants for the position of Surgeon-Superintendent to the Launceston General Hospital. This position has been held for several years by Dr. H. W. Sweetnam and will fall vacant on May 31, 1919. The Board of Management is endeavouring to secure the services of a house surgeon. In view of the fact that the Tasmanian Government has introduced legislation giving all and sundry the right of admission into the wards of the hospitals, no member of the medical profession who has the interests of his profession and of the sick poor at heart, will be willing to take either of these positions.

Abstracts from Current Medical Literature.

ORTHOPÆDIC SURGERY.

(174) The Pensionability of the Disabled Soldier.

J. L. Biggar defines the work of the Board of Pension Commissioners, with a view to arousing the interest of the medical profession (*Canad. Med. Assoc. Journ.*, January, 1919). The pensions are awarded for disability, not for loss of a part of the body. Disability reduces a man's capacity for ordinary employment (1) because, by reason of his loss of normal ability, his choice of occupation is restricted; (2) because he is, by reason of his disease, prevented from following certain forms of work; (3) because, by reason of his injury, he requires more rest than an ordinary man. The first necessity is to determine a man's employability in the general labour market, and this is done without any reference to his previous occupation. The fact that he cannot return to his former calling at which he was able to earn a larger wage, does not entitle him to a larger pension than is awarded to others for a similar disability. Total disability is considered to be present when the individual is unable to follow any occupation, and in these cases the applicant receives $600 per annum, together with allowances for his wife and children. The author thinks that the determination of the disability present and of the amount of pension to be granted is highly specialized work and that the experience gained by the members of the medical staff of the Board of Pensions enables them to come to a more just conclusion than could the medical men who treat or examine the patient when he is being discharged. The author claims that a central board is better able to deal with this question, in spite of not being able to examine the applicant, than a number of boards scattered over the country. For this purpose, however, perfect case histories are required to enable the board to do its work efficiently and consistently. The best reports are those which contain careful and thorough descriptions of the anatomical condition of the affected organ and a comprehensive computation of the measure of functional capability.

(175) Productive Occupational Therapy.

The importance of occupational treatment has long been recognized and has been firmly established during the last few years. Apart from the prevention of deformities, contractures and adhesions following injuries to joints and bones in cases of protracted healing, the preservation of human energy and the prevention of mental inertia are highly important results. The use of apparatus, such as the Zander machines or the many imitations for producing passive movements, is useful in civil practice, but in the case of the soldier who has been for long periods away from industrial life, all effort should be industrially productive. In providing suitable work the occupational shops need not necessarily be large, elaborate or complicated. The disabilities for which appliances must be provided may be grouped into those of the six main mobile regions-hand, elbow, shoulder, hip, knee and ankle. These groups present so large a percentage of the deformities and disabilities that it is possible to have stock sets of appliances for their treatment. Less common and more complicated injuries may need special appliances. The fact of learning an occupation has the effect of producing hopefulness in men who have become depressed as a result of their injuries. The author, E. G. Brackett (*Jour. Orthop. Surg.*, January, 1919), suggests that the machines acquired for treating war injuries could afterwards be adapted to treat industrial injuries of a similar nature.

(176) Pseudo-Coxalgia Following Dislocation of the Hip.

R. C. Elmslie (*Jour. Orthop. Surg.*, February, 1919) records a case of dislocation of the hip of a boy, aged 4 years. He kept the patient under observation for four years. The hip was reduced on the X-ray table and fixed in plaster of Paris for a fortnight. One year and two months afterwards the boy was brought back complaining of limping and pain in the hip after walking. On this occasion the author did not see the patient, who was treated for a tubercular hip and fixed in plaster for five months. At the end of this time another radiogram was taken and this showed irregularity of the head of the femur with thickening where the upper margin of the acetabulum pressed upon it and also broadening of the neck of the bone. The author at once recognized the changes as pseudo-coxalgia. Treatment was immediately stopped and the boy was allowed to use the limb freely. The last radiogram, taken four years after the original injury, shows great thickening of the neck of the femur and a very broad epiphysis which is now smooth on the upper surface. The author thinks the rough appearance of the head of the femur was due to changes in the bone and not of the cartilage covering it. This might also be inferred from the fact that the movements of the joint remained free practically throughout. On account of the occurrence of pseudo-coxaglia in this case as a sequel to traumatic dislocation, it is suggested that the changes are due to injury of the vascular supply of the bony nucleus. This could be brought about by injury to the *ligamentum teres.*

(177) The Abduction Treatment of Fracture of the Neck of the Femur.

Royal Whitman (*Surg. Gynec. and Obstet.*, December, 1918) found that fracture of the neck of the femur was attended by non-union, although the processes of repair were active. This, he concluded, was due to inefficient treatment and neglect. In endeavouring to rectify the error he evolved the abduction treatment, which was so successful that he afterwards applied it in adults. The basis of all conventional treatment is traction in some form, but this is inadequate because the mechanical problem at the hip joint is different to that in other situations. The neck of the femur projects at an angle and the fragments in fracture lie in lateral relationship, so that the resistance of mutual pressure which is essential to repair of a fracture, cannot be obtained. In fracture of the neck of the femur the displacement is always in the outer fragment and is usually upwards, backwards and outwards. Consequently the limb must be lifted forwards, rotated inwards and drawn downwards to approximate the fragments. Abduction forces the neck of the femur down to a horizontal plane, while the tension of the capsule aligns the fragments, and the contact of the trochanter with the rim of the acetabulum ensures stability. Muscular impotence is brought about in complete abduction. Impacted fractures are almost always accompanied by deformity, which is reduced by traction, internal rotation and abduction. To reduce the fracture the patient is placed on a pelvic rest which has a perineal bar for counter-extension, the shoulders resting on a box of equal height. Under an anæsthetic traction is made on each limb by assistants, while the surgeon lifts the thigh upwards and guides the trochanter into the normal position. After the reduction of shortening, the limb is rotated until the patella points slightly inwards, and not till then is the limb carried into abduction. A long spica bandage of plaster of Paris, extending from the nipples to the toes, is then applied. The knee should be slightly flexed and the foot should be placed at right angles to the leg. Full flexion of the opposite hip should be allowed. The purpose of the support is to ensure anatomical rather than direct splinting. The plaster is retained for eight to twelve weeks, after which the patient remains in bed for several weeks to be treated with massage, active and passive movements. The author lays stress on the necessity for a passive movement of full abduction to be given for some time. Weight bearing should not be permitted for at least six months. A caliper splint which permits locomotion without direct weight bearing, is desirable.

MORPHOLOGY.

(178) The Obliteration of Fœtal Blood Passages.

R. E. Scanmon and E. H. Norris, *Anatomical Record* (Vol. 15, No. 4), give some interesting observations on the time of the post-natal obliteration of the fœtal blood passages. The time of obliteration of the three fœtal blood passages (*ductus venosus, ductus arteriosus* and *foramen ovale*) is distinctly later than is commonly assumed. The process of obliteration in each of these passages shows three fairly distinct periods: an initial period with a low rate of obliteration; a middle period,

in which the rate of obliteration rises and in the majority of cases the passages are closed; and a terminal period, in which the rate of obliteration is again slower. Obliteration is the most rapid in the *ductus venosus*. Although slow in the first week, the process reaches its maximum before the end of the first month and in the third month and thereafter the ductus is closed. The *ductus arteriosus* closes more slowly. The obliterative process, which is very slow during the first two weeks of life, does not reach its maximum until the second month. Three-fourths of all cases are closed at the end of the first trimester and over 95% by the end of the first year. The period of the obliterative process of the *foramen ovale* is a matter of years rather than months. Beginning slowly the process reaches its maximum activity near the close of the first month and continues with a slightly diminishing rate during the remainder of the first trimester. At the end of this period approximately one-third of all cases are closed. At the end of the first year about one-half of all cases are closed, in the second decennium about two-thirds and in maturity about 72%.

(179) The Effect of Temperature on the Development of the Nervous System.

F. M. Alsop deals with the effect of abnormal temperatures upon the developing nervous system of chick embryos (*Anat. Record*, January, 20, 1918). She states that abnormalities in developing embryos have been produced in many ways. Some scientists have used an abnormal amount of heat, others have produced abnormalities by chemical re-agents, whilst still others have induced embryological changes by hybridization and centrifugal force. Greeley found in 1901 that by lowering the temperature, certain well defined structural changes took place which were not necessarily incidental to the permanent suspension of the vital functions of the cell. King showed in 1903 that excessive heat caused abnormalities in toads' eggs and hastened their development. Loeb was successful in producing blind fish embryos with the aid of low temperatures and hybridization. Newman succeeded in producing monsters in 1917 by hybridization. Chemicals such as the fumes of alcohol and ether led to many abnormal embryos in experiments conducted by Fere in 1899. In an incubator set over the ventilator of a chemical laboratory, the eggs that hatched yielded many abnormal chicks. Narcotics have also been used on hens' eggs to produce abnormalities in the chicks. Banta and Gortner in 1914 produced accessory appendages in the amphibian larvæ through the action of centrifugal force. As a result of their experiments, they found that excessive heat, *i.e.*, ranging between 39.4° and 42.2° C., produced 90% abnormal embryos and, of the abnormalities, 46% were in the head region and 54% were in the neural tube. A chick incubated at 42° C. for 72 hours does not outgrow any of the abnormalities produced at an earlier stage of development. Eggs incubated at a low temperature, *i.e.*, between 34.4° and 38.3° C., yielded 67% abnormal embryos. Of the abnormalities 17% were in the head region and 83% were in the neural region. Under 6.5% of abnormal embryos were obtained from eggs incubated at normal temperatures. Many of the abnormalities found in these chicks differed from the deformities produced by abnormal temperatures.

(180) The Formation of the Filum Terminale.

George L. Streeter deals with the factors involved in the formation of the *filum terminale* (*Amer. Journ. Anat.*, January 15, 1919). He makes a special note of the retrogressive differentiation or de-differentiation. In an earlier paper the author had pointed out that certain areas of cartilaginous tissue in the ear of the human embryo revert to an earlier embryonic type and are subsequently re-differentiated into a tissue of a widely different histological character. He claims that a similar process of de-differentiation takes place in the caudal region of the spinal cord. He holds that in the human embryo the greater part of the coccygeal cord, that is the part caudal to the thirteenth segment, undergoes de-differentiation. The more cephalic persists as the *ventriculus terminalis* and the more caudal part re-differentiates into a fibrous strand, the *filum terminale*, with the coccygeal medullary vestige at the tip. The first 29 segments of the spinal cord are not affected by this process of de-differentiation, but continue in a progressive development. When the embryo reaches 30 mm. in length there begins a disproportion in the rate of growth of the vertebral column and of the spinal cord. The former elongates more rapidly than the latter. This results in a relative displacement of the two structures. The *ventriculus terminalis* in the 221 mm. fœtus (25 weeks) lies nine segments higher than it originally did. By the time the adult form is attained, the displacement is increased by two segments. He concludes that the *filum terminale* represents that portion of the spinal cord caudal to the second coccygeal segment (thirty-first segment) which has undergone de-differentiation, and has finally become converted into a fibrous strand. This strand, like the sacral nerve root, elongates by interstitial growth in its adaptation to the ascending displacement of the spinal cord. The caudal tip of the dural sac maintains its relation to the vertebræ rather than to the spinal cord, and remains attached to the *filum terminale* in the sacral region at a more or less fixed point.

(181) Corpus Adiposum Buccæ.

R. E. Scammon deals with the development and finer structure of the *corpus adiposum buccæ* (*Anat., Record*, January 20, 1919). The *corpus adiposum buccæ* is a sharply circumscribed mass of fat globules, which are formed around the radicles of the middle part of the venous plexus connecting the orbital veins with the superficial veins of the face. It is differentiated within a more or less well marked area of cheek, termed by the author the buccal space. The general region in which the *corpus adiposum buccæ* or sucking pad arises, is mapped out in fœtus 4 or 5 cm. in length and exists as a definitely encapsulated area in fœtus 8 to 10 cm. in length. At this stage the fat cells appear. The growth of the pad is subsequently rapid. In the early stage it is mainly due to the expansion of the enclosed mesenchymal and pre-adipose tissue and in the later stage growth is mainly due to an increase in the fat contents. The finer structure of the sucking pad differs from that of ordinary superficial adipose tissue in that its interlobular septa are somewhat narrower and are arranged radially in the body. The pad persists in adult life in the large majority of cases. Its presence is apparently not dependent on nutrition, as it is at times found well developed on one side and absent on the other side in the same individual. It is also found well developed in individuals dead of wasting disease. The sucking pad is developed quite independently of the parotid duct, the molar glands and the orbital inclusion, and these structures never penetrate it.

(182) Anabiosis of the Earthworm.

Peter Schmidt, of the Agricultural College in Petrograd, has conducted numerous researches into the subject of anabiosis of earthworms (*Journal of Experimental Zoology*, Vol. 27, No. 1, October 5, 1918). The remarkable biological phenomenon, known as anabiosis, was observed in 1701, in connexion with groups of microscopical animals living in the moss of roofs and the sand of roof gutters. These animalculæ can be completely dried up, but retain their vitality for many weeks or months; when, if placed in water, they quickly become swollen and soon revive. Earthworms contain on an average 84% water. By a process of exsiccation they lose their mobility, their size diminishes to one half or one third, and they show no sign of life. But in order to retain sufficient vitality to be able to revive the elasticity of the body must be retained and the skin must be soft. The worm, even in this condition, becomes a dark brown colour, and has the appearance of a corpse or mummy. In this state earthworms will revive up to thirty-nine hours at ordinary temperature and up to forty-eight hours or more at low temperatures. Earthworms can revive and regain their normal state of life after a loss of nearly 73% of the water contained in the body, which represents 61.6% of their body-weight. The more complicated organization of the worms, as well as the presence of putrefactive organism in the gut, render them less amenable to continue preservation in the exsiccated state, as compared to the microscopic animals in which this phenomenon was first noticed.

Reviews.

MEDICAL EDUCATION.

The *Edinburgh Medical Journal* printed a number of papers, read before the Edinburgh Pathological Club, which dealt with the nature of the matter and the extent of the training necessary in the various subjects of the medical curriculum. A synopsis of the discussion which followed the papers was published with them. The whole of these papers, together with the resumé of the discussion and the final report of the club, have been reprinted in a volume[1] which runs to rather more than 500 papers. The papers were read during the Session of 1917-18, and were chiefly contributed by members of the Edinburgh School, but a number of addresses were given by eminent teachers of other Scottish Universities and by members of the staffs of the medical schools of Oxford, London, Dublin, Manchester, Newcastle and Birmingham. The inquiry also included contributions on special subjects from members of the Royal Army Medical Corps, from general practitioners of medicine in England and Scotland and from school teachers. At the end of this inqury into the medical curriculum a special Committee of the Club was appointed to review the discussion and to formulate the conclusions to which it had led. By the courtesy of the editors of the *Edinburgh Medical Journal*, Mr. A. Miles and Dr. J. S. Fowler, the special committee of the Club was able to arrange for the production of the whole inquiry as one book. The Club lies under a debt to the Carnegie Trust for the Universities of Scotland for a grant which defrayed the cost of issuing the reprint. The Convener of the Special Committee, Professor J. Lorrain Smith, and the Secretary, Dr. H. M. Traquair, have placed all those interested in the education of medical students in their debt by making available to them the whole series of expressions of opinion contained in the book.

The opening address is by Sir James Mackenzie, who considers the aim of medical education. He draws attention to the growth of the feeling that the time has arrived when the curriculum of medical education should be revised. He considers the object of medical education to be the instruction of the medical practitioner in the art of detecting disease, in the recognition of the danger of illnesses and in the prevention and cure of sickness. He draws attention to the lack of knowledge of the earlier stages of diseases in which they are most amenable to treatment. He is thus led to plead for a greater share in the teaching of students by the general practitioner. He thinks that there are whole fields of medicine absolutely essential to progress from which the teaching class are shut off but which are reached by those in general practice. This address was not discussed.

Professor James Walker deals with the teaching of chemistry. He points out that the University of Edinburgh is instituting immediately a chair of medical chemistry and that he will be the first professor. He would be inclined to drop test-tubing in the practical class and to give work leading to a better appreciation of the lectures. He hopes that the new Department of Medical Chemistry will be in close touch with the Departments of Physiology, Pharmacology, Pathology and Bacteriology. He advocates co-ordination between the instruction in chemistry and that given in the subjects of pathology, physiology and pharmacology whereby the courses will be continuous, so that the student does not think that the study of chemistry has ceased when he has passed the First Professional Examination. In the discussion the opinion was expressed that the attempt to teach the subjects of the medical curriculum in water-tight compartments was a mistake, and everybody agreed that Departments must learn to work together and to apportion parts of their courses to other Departments in which they could be taught more readily. The Department of Medical Chemistry would teach chemistry, including physiological chemistry, pathological chemistry, clinical chemistry and chemistry in relation to foods and drugs.

The address on the teaching of anatomy is given by Professor G. Elliot Smith, and is followed by papers by Professor D. Waterston and A. Robinson. Professor Elliot Smith criticises the narrow conception of most British schools that anatomical teaching comprises a knowledge of the dissection of the dead body. He also animadverts upon dreary systematic lectures and on the absence of any real attempt to explain the meaning of the structure of the body and its relation to the problems of the pathologist and the clinician. He advocates the elimination of the course of osteology. He relates how he sat for two terms at the feet of one of the most clear-sighted and inspiring of teachers, yet he ceased to learn anything at the lectures. He tells how positive and intense repugnance to the business of acquiring a knowledge of the bones took possession of him.

Dr. J. S. Haldane contributes a paper on the relation of physiology to medicine. This paper is accompanied by two others by Sir Edward Schafer, dealing with the place of the systematic lecture as a means of instruction and with the relation of the preliminary sciences to the rest of the curriculum. Dr. Haldane endeavours to ascertain why modern physiology is out of touch with practical medicine and why the majority of medical practitioners receive little assistance from a knowledge of physiological text-books. He suggests that the study of physiology be carried on in connexion with the wards of the hospital. He insists that anatomy, physiology, pathology and pharmacology are all branches of one science to be studied by the same methods and in the same place. He would attach a room for investigation to each ward of a hospital. A paid assistant would be needed to carry on investigation under the control of the physician or surgeon and to act as an intelligence officer for a department in the medical school with which he would be in communication. In this manner there would be constant association between the university laboratory and the clinical work in the ward. Dr. Haldane refers to the marked advances in America in bringing about a proper co-ordination between laboratories with their exact methods of study and the treatment of the sick. Sir Edward Schafer thinks that systematic courses of lectures should be abolished and that lectures should be given in explanation of the practical work in the laboratory and special lectures occasionally on definite subjects. These should be delivered by those who have made investigations on the subject. He suggests that teachers should be allowed more scope in selecting how they will teach. The discussion revealed unanimous agreement that systematic lectures should be replaced by practical work.

Professor H. K. Dean delivers an address on pathology and the medical student. This is followed by papers by Drs. I. Mackenzie, J. S. Edwards and Professors J. Lorrain Smith and J. Ritchie. Professor Dean suggests a two years' course. He would commence practical work with bacteriology. He considers that an honours class for the better-trained student would be advantageous, as such students can make more rapid progress. Dr. Mackenzie lays stress on the pathology of the morbid process rather than on the description of the morbid state. He suggests that the student should be taught to consider how the morbid condition of the organs seen at autopsy and examined with the microscope is brought about. Lack of space prevents any reference to the inquiries into the mode of instruction in materia medica and therapeutics and in public health.

Professor W. Russell presents a working plan for teaching clinical medicine. His address is followed by those of Professor C. L. Gulland and Dr. E. Matthew. Professor Russell considers that students must be made to do what is needed. Dr. Matthew presents the combined views of the assistant physicians to the Royal Infirmary. They propose that the systematic lectures be diminished to fifty, not taken together, but in short courses. These lectures should deal with general therapeutics, physical therapeutics, dietetics, medical ethics and psychology in relation to medicine. The clinical lectures should be junior and senior and no student should attend the senior lectures until after six months' instruction. At the bedside the students should be limited in number and should be graded. Attendances should be regularly ascertained and enforced. The case records of students should be part of the qualifying examination. The selection of cases should be based on the needs of the student. Care should be exercised at a review of what has been done, to see that the ground has been well covered. They ask for an extension of the facilities for clinical investigation.

Dr. G. Grey Turner delivers the address on surgical teaching and is followed by Professors F. M. Caird, Alexis

[1] An Inquiry into the Medical Curriculum by the Edinburgh Pathological Club; 1919. Edinburgh: W. Green & Son, Ltd.; Royal 8vo., p. 512. Not for Sale.

Thomson and Dr. A. Miles. Dr. Turner suggests a limited course of systematic lectures, close association with patients, continuity in the instruction and repeated discussion with the student to ascertain how much has been learned. He suggests special clinics organized on the continental plan. Professor Caird thinks that the student is over-burdened and that insufficient control is exercised over his work in hospital. The student should be so directed that he makes full use of the opportunity offered by each patient. He is of opinion that the teachers must give at least three hours' daily to teaching each student in the wards. Dr. Miles advocates a reduction of the course of systematic lectures.

Sufficient has been done to make evident the careful manner in which the Edinburgh Pathological Club has approached its task. Many other papers record the inquiry into other parts of the curriculum. Thus there appear articles dealing with instruction in connexion with diseases of children, dispensary practice, venereal diseases, tuberculosis, obstetrics, mental diseases and diseases of the eye, ear, nose and throat. Papers treat of the education at school of medical students before they enter the university. Some most interesting articles appear from the pens of general practitioners, recording their impressions on their medical training. We cannot speak too highly of the accumulation of information gathered by the editors into the volume and we trust that the hours spent by the members of the Club and the generous spirit which made their labours available to mankind, will bear fruit in the better education of the medical student.

This book is not on sale. A few copies are still available for distribution. Applications for copies should be made to the Secretary of the Edinburgh Pathological Club, Dr. H. M. Traquair, 16 Manor Place, Edinburgh.

Public Health.

QUEENSLAND.

The following notifications have been received by the Department of Public Health, Queensland, during the month of April, 1919:—

Diseases.	No. of Cases.
Enteric Fever	112
Scarlatina	37
Diphtheria	379
Pulmonary Tuberculosis	29
Erysipelas	4
Anchylostomiasis	6
Cerebro-Spinal Meningitis	8
Puerperal Fever	2
Poliomyelitis	22
Pneumonia	31

SOUTH AUSTRALIA.

The following notifications have been received by the Central Board of Health, Adelaide, during the fortnight ending April 5, 1919:—

	Adelaide. Cs.	Dths.	Rest of State. Cs.	Dths.	Total. Cs.	Dths.
Enteric Fever	0	0	10	0	10	0
Scarlatina	3	0	56	0	59	0
Diphtheria	7	1	85	1	92	2
Pulmonary Tuberculosis	7	8	19	10	26	18
Erysipelas	2	0	3	0	5	0
Morbilli	2	0	14	0	16	0
Pertussis	1	0	25	3	26	3
Influenza	11	1	382	13	393	14
C'bro-Spinal Meningitis	0	1	0	0	0	1

WESTERN AUSTRALIA.

The following notifications have been received by the Department of Public Health, Western Australia, during the fortnight ending April 5, 1919:—

	Metropolitan. Cases.	Rest of State. Cases.	Totals. Cases.
Enteric Fever	10	10	20
Scarlatina	22	6	28
Diphtheria	36	16	52
Pulmonary Tuberculosis	24	14	38
Septicæmia	0	1	1
Malaria	15	1	16
Beri-beri	0	2	2
Dengue Fever	0	25	25
Bilharziosis	1	1	2
Ophthalmia Neonatorum	0	8	8
Erysipelas	1	1	2

VICTORIA.

The following notifications have been received by the Department of Public Health, Victoria, during the month of April, 1919:—

	Metropolitan. Cs.	Dths.	Rest of State. Cs.	Dths.	Total Cs.	Dths.
Enteric Fever	1	0	23	0	24	0
Scarlatina	90	2	103	0	193	2
Diphtheria	203	8	193	5	393	13
Pulmonary Tuberculosis	70	48	20	13	90	61
C'bro-Spinal Meningitis	1	1	0	0	1	1
Puerperal Fever	2	0	3	0	5	0

Influenza.

The following table shows the distribution of cases of influenza notified and of the deaths notified from January 19 to March 16, 1919.

Week Ending—	Cases Reported. Metropolitan.	Rural.	Total.	Daily Avg.	Deaths Reported. Metropolitan.	Rural.	Total.	Daily Avg.
1919—								
Jan. 26	575	21	596	85	19	1	20	3
Feb. 2	1,236	83	1,319	188	27	5	32	5
Feb. 9	1,632	204	1,836	262	87	7	94	13
Feb. 16	1,544	153	1,697	242	175	11	186	27
Feb. 23	1,080	120	1,200	171	94	5	99	14
March 2	1,420	164	1,584	226	70	7	77	11
March 9	810	119	929	133	54	11	65	9
March 16	550	167	717	102	43	9	52	7
Totals	8,847	1,031	9,878		569	56	625	

VENEREAL DISEASES.

Returns for the Year 1918.

VICTORIA.

	Males.	Females.	Total.
Gonorrhœa	4,367	511	4,878
Syphilis (acquired)	1,116	572	1,686
Syphilis (congenital)	115	154	269
Soft Chancre	70	4	74
Gonorrhœ and Syphilis	76	23	99
Gonorrhœa & Soft Chancre	8	2	10
Gonorrhœa, Syphilis and Soft Chancre	6	0	6
Syphilis and Soft Chancre	4	0	4

Total number of persons infected 6,790.

British Medical Association News.

SCIENTIFIC.

A meeting of the Queensland Branch was held at the B.M.A. Rooms, Adelaide Street, Brisbane, on April 4, 1919, the President, Dr. A. Sutton, in the chair.

Dr. A. Sutton and Dr. G. A. C. Douglas read some notes dealing with the weight and measurement of a still-born

fœtus. The weight was 7,144 grm. (15¾ lbs.) and the various measurements were as follows:—

Circumference of Head	39.3 cm.	(15½ in.)
Occipito-Mental	46.3 cm.	(18¼ in.)
Occipito-Frontal	13.1 cm.	(5¼ in.)
Bi-Parietal	10.8 cm.	(4¼ in.)
Bis-Acromial	18.4 cm.	(7¼ in.)
Chest Measurement	41.25 cm.	(16¼ in.)
Girth at Level of Umbilicus	41.9 cm.	(16½ in.)
Length of Body	62.25 cm.	(24½ in.)

Dr. Wallis Hoare read some notes of two cases of severe injury to the eye (see page 404) and exhibited the patients.

Dr. J. A. Cameron showed a patient suffering from atrophy of the deltoid muscle.

A discussion took place on the diagnosis of pulmonary tuberculosis. Dr. Eustace Russell read a paper on this subject and Dr. A. Stewart, Dr. L. M. McKillop, Dr. J. Lockhart Gibson and Dr. Alfred Sutton took part in the discussion.

MEDICO-POLITICAL.

At a meeting of the Victorian Branch held at the Medical Society Hall, East Melbourne, on May 7, 1919, Dr. C. H. Mollison, the Honorary Treasurer, presented the financial statement of the Branch and of the Medical Society of Victoria.

BRITISH MEDICAL ASSOCIATION (VICTORIAN BRANCH).

Revenue and Expenditure Account for Period from January 18, 1918, to January 17, 1919.

Expenditure.

	£ s. d.
By Medical Society of Victoria	1,278 15 0
„ *British Medical Journal*	853 8 6
„ Federal Committee (Expenses)	20 7 0
„ Postages, Duty Stamps, etc.	32 2 5
„ Printing	28 15 8
„ Stationery	18 15 2
„ Clerical Assistance	4 1 9
„ Commission (new members)	4 15 6
„ Advertisements	5 16 6
„ Audit for 1917	2 2 0
„ Travelling Expenses	0 13 9
„ Sundries and Telephone Calls	14 16 9
„ Organization Fund, Amount Overcredited	1 1 0
„ Bank charges	0 9 10
„ Balance	265 11 6
	£2,531 12 4

Liabilities.

To balance as above	265 11 6
	£265 11 6

Revenue.

	£ s. d.	£ s. d.
To balance January 18, 1918		223 3 3
„ Subscriptions—		
Metropolitan members	1,197 17 0	
Country members	963 16 3	
Junior members	145 17 0	
Rebate, London	2 16 0	
	£2,310 6 3	
Less Refunds	2 2 0	
		2,308 4 3
„ Interest on Deposit, Commonwealth Bank		0 4 10
		£2,531 12 4

Assets.

To Bank of Victoria, Ltd.	154 4 10
„ Commonwealth Bank of Australia, Ltd. Balance Credit	8 6 8
„ Trustees, Organization Fund	100 0 0
„ Petty Cash in hand	3 0 0
	£265 11 6

(Sgd.) C. STANTON CROUCH, Secretary.
(Sgd.) C. H. MOLLISON, Hon. Treasurer.

Audited and found correct—
(Sgd.) J. V. M. WOOD & Co., Auditors.
Melbourne, January 29, 1919.

MEDICAL SOCIETY OF VICTORIA.

Revenue and Expenditure Account for Period from January 18, 1918, to January 17, 1919.

Expenditure.

	£ s. d.	£ s. d.
By *The Medical Journal of Australia*		827 2 8
„ Salaries—		
Secretary	£409 18 4	
Library Clerk	41 0 0	
Caretaker	26 0 0	
	476 18 4	
„ Library—Journals and Binding		28 18 2
„ Postages, etc.		31 15 6
„ Rates, Taxes and Insurance		11 10 0
„ Telephone		7 2 3
„ Light and Power		8 8 3
„ Audit for 1917		3 3 0
„ Bank charges		1 0 0
„ Repairs		5 3 0
„ Furniture		3 15 0
„ Balance in Bank of Victoria, Ltd.		26 1 7
		£1,430 17 9

Revenue.

	£ s. d.
To Balance 18th January, 1918	152 2 9
„ Subscriptions	1,278 15 0
	£1,430 17 9

(Sgd.) C. STANTON CROUCH, Secretary.
(Sgd.) C. H. MOLLISON, Hon. Treasurer.

Audited and found correct—
(Sgd.) J. V. M. WOOD & CO., Auditors.
Melbourne, January 29, 1919.

The undermentioned have been nominated for election as members of the New South Wales Branch.

Dominic Augustine Cahalan, Esq., M.B. (1919, Univ. Sydney), St. Vincent's Hospital, Darlinghurst.

Carl Hermann Jaede, Esq., M.B. (1919, Univ. Sydney), Sydney Hospital.

Sydney Michael O'Riordan, Esq., M.B. (1914, Univ. Sydney), "Killarney," Dudley Street, Coogee.

Naval and Military.

CASUALTIES.

The 464th list of casualties, which was published for general information on March 7, 1919, contains the names of three members of the medical profession. The death from illness of Major Henry Hunter Griffiths, which was reported in our issue of April 5, 1919, is officially announced. Among those ill are Captain Frederick Charles Dunn and Captain Seymour Crawcour.

HONOURS.

The following details concerning the award of the decoration of Military Cross have been published in *The London Gazette* during the month of February, 1914. The announcement of the awards was published in *The Medical Journal of Australia* on February 22, 1919, and March 11, 1919:—

Military Cross.

Captain John Claude Moseley Harper, 7th Field Ambulance, A.A.M.C., attached 28th Battalion, A.I.F. For conspicuous gallantry and devotion to duty. During the operations on the Somme River and East of Mont St. Quentin on August 29 and September 2, 1918, he displayed the greatest gallantry and coolness in attending the wounded, although he was under heavy shell and machine-gun fire the whole time. His untiring energy and splendid example, and his personal supervision of the evacuation of the wounded, yielded excellent results, in spite of most trying conditions.

Captain Frederic Hobart James, A.A.M.C., attached 56th Battalion, Australian Infantry. For conspicuous gallantry and devotion to duty. During the attack on Peronne on September 1 to 3, 1918, this officer was conspicuous for his gallantry and devotion to duty, working unceasingly under heavy fire and practically without sleep during the whole period, attending to a large number of wounded. His energy and untiring self-sacrifice were worthy of the highest praise.

Captain Archibald Lang McLean, A.A.M.C., attached 17th Battalion, Australian Infantry. For conspicuous gallantry and devotion to duty. During the attack on August 8, 1918, east of Villers Bretonneux, near Amiens, he followed the attacking troops with his section, tending and dressing wounded under fire on the way. Almost immediately after the objective had been taken he established his regimental aid post in the village of Warfusée, where he worked continuously under great difficulties. Later, during the advance on the following day, he established his regimental aid post almost on the jumping-off line, where he tended and cared for wounded under heavy artillery fire. His energy and zeal saved many lives.

Captain Reginald Edward Nowland, A.A.M.C., attached 157th Brigade, R.F.A. For conspicuous gallantry and devotion to duty. On September 27, 1918, near Ypres, the leading battery came under heavy shell fire and suffered many casualties. Ignoring all danger, he established an aid post on the roadside and attended to the wounded. Later in the day, when the batteries moved further forward, he visited all the gun positions and attended to the wounded.

Correspondence.

THE EPIDEMIOLOGY OF INFLUENZA.

Sir,—In last week's *Journal*, under the above heading, you publish a list of questions that you suggest should be addressed to medical practitioners to assist in our gaining more knowledge than we possess as to the epidemiology of influenza. In your concluding sentence you say: "In no case will the district in which the patients reside or their identity be disclosed." With all respect I think that one of the most important points to know is the locality. Influenza, like many other diseases, is supposed to be largely spread by general insanitary conditions, bad air, and especially overcrowding; and, although there is no need to disclose the identity of the patient, no possible harm could come from publishing the district; in fact, it would be most useful, I think, in showing that in this epidemic the disease has been most rife in crowded areas.

Not only is this the case, I believe, in the city and suburbs, but evidence on this point is also shown in the case of Lithgow, which, for some years, has been notoriously overcrowded, so much so that several families have had to live in one house. I have not heard of a single case of pneumonic influenza having been contracted in the suburban postal district in which I reside, where the houses are far apart, with plenty of open spaces between.

Would it not also be of value to enquire as to whether the the patients and contacts had been inoculated or not? If they had, as to how often, with what vaccine and how long between the last inoculation and the contracting of the disease.

Yours, etc.,

F. ANTILL POCKLEY.

227 Macqurrie Street, Sydney,
May 7, 1919.

THE NOTIFICATION OF INFECTIOUS DISEASES.

Sir,—I read with interest your editorial "A Perennial Defect," in which you take the profession to task for laxity in notifying cases of diphtheria. I enclose for your perusal a sheet of three notifications in any one case (to say nothing of the "butt" from which this sheet is torn) which a medical practitioner has to fill in if he wants to notify a case of infectious disease, and I ask you, is it any wonder that cases are not notified? As you will see, one has to find out the patient's full name and age, and occupier's (of house) full name. You must know the name of the area, school attended by the patient, number of inmates of the house (names, for a wonder, not wanted), the patient's occupation. Then you must go home, fill in three sets of notices, and either post or deliver these to three different addresses.

Now there is absolutely no necessity for all this and most medical men have neither time nor inclination to fill in a stack of notices. Nothing more should be required than the briefest notification to the L.A., *e.g.*:

Name—James Smith.

Address—Runalong Street, Maryborough, is suspected by me to be suffering from ————, which is a notifiable disease within the meaning of the *Health Act, 1900-1911*.

Signature ————

This should be in the form of a folder, with the L.A.'s address printed already on the back, and all one has to do is to fold it and put it in the post.

The rest of the red tape could be done by the council clerks if it were really necessary.

While the present cumbersome method of notifying infectious disease is in vogue, the notifying of these will be unsatisfactory. And the more unsatisfactory it is the better. For then, and only then, will the average health department wake up and save money for itself and time for others.

Yours, etc.,

May 5, 1919. A.G.P.

Books Received.

BEVERAGES AND THEIR ADULTERATION, Origin, Composition, Manufacture, Natural, Artificial, Fermented, Distilled, Alkaloidal and Fruit Juices, by Harvery W. Wiley, M.D.; 1919. Philadelphia: P. Blakiston's Son & Company; Royal 8vo., pp. 421, with 42 illustrations. Price, $3.50 net.

AIDS TO SURGERY, by Joseph Cunning, M.B., B.S., F.R.C.S., and Cecil A. Joll, M.S., F.R.C.S.; Fourth Edition; 1919. London: Baillière, Tindall & Cox; Foolscap 8vo., pp. 420. Price, Cloth, 4s. 6d net.
THE DIAGNOSTICS AND TREATMENT OF TROPICAL DISEASES, by E. R. Stitt, A.B., Ph.G., M.D., LL.D.; Third Edition, Revised; 1919. Philadelphia: P. Blakiston's Son & Company; Crown 8vo., pp. 534. Price, $2 net.

Medical Appointments.

Dr. Thomas Ryan (B.M.A.) has been appointed Medical Officer of Health to the Esperance Road Board, Western Australia.

Under the provisions of *The Health Acts, 1900 to 1917*, Dr. J. W. Heaslop (B.M.A.) has been appointed a temporary Health Officer to the Department of Public Health, Queensland.

It is announced that Dr. W. Waugh Hope has been appointed an Officer of Health for the Southern Portion of Shire of Colac and Dr. W. E. Tulloh (B.M.A.) for the West Riding of the Shire of Waranga, Victoria.

The appointment of Dr. William Waugh Hope as Public Vaccinator for the South-Western District, of Dr. W. E. Tulloh (B.M.A.) for the Northern District, of Dr. D. H. Young and Dr. D. Crombie (B.M.A.) for the North-Western District and of Dr. William Begg (B.M.A.) for the Metropolitan District, Victoria, is announced in the *Victorian Government Gazette*.

Dr. Bertram C. Cohen having resigned, Dr. A. J. Shanasy has been appointed Junior Resident Medical Officer of the Perth Public Hospital, Western Australia.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xvii.

Bundaberg General Hospital, Queensland: Medical Officer.

Alfred Hospital: Acting Honorary Physician to Out-Patients.

Children's Hospital, Perth: Two Assistant Resident Medical Officers.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
VICTORIA. (Hon. Sec., Medical Society Hall, East Melbourne.)	All Friendly Society Lodges, Institutes, Medical Dispensaries and other Contract Practice. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
QUEENSLAND. (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Australian Natives' Association. Brisbane United Friendly Society Institute. Cloncurry Hospital.
TASMANIA. (Hon. Sec., Macquarie Street, Hobart.)	Medical Officers in all State-aided Hospitals in Tasmania.
SOUTH AUSTRALIA. (Hon. Sec., 3 North Terrace, Adelaide.	Contract Practice Appointments at Renmark. Contract Practice Appointments in South Australia.
WESTERN AUSTRALIA. (Hon. Sec. 6 Bank of New South Wales Chambers, St. George's Terrace, Perth.)	All Contract Practice Appointments in Western Australia.
NEW SOUTH WALES. (Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Australian Natives' Association. Balmain United Friendly Societies' Dispensary. Canterbury United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Friendly Society Lodges at Lithgow. Friendly Society Lodges at Parramatta, Auburn and Lidcombe. Leichhardt and Petersham Dispensary. Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. Newcastle Collieries—Killingworth, Seaham Nos. 1 and 2, West Wallsend. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
NEW ZEALAND: WELLINGTON DIVISION. (Hon. Sec., Wellington.)	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

May 20.—Tas. Branch, B.M.A., Council.
May 20.—N.S.W. Branch, B.M.A., Executive and Finance Committee.
May 20.—Illawarra Suburbs Med. Assoc. (N.S.W.).
May 21.—W. Aust. Branch, B.M.A., Council and Branch.
May 23.—Q. Branch, B.M.A., Council and Branch.
May 27.—N.S.W. Branch, B.M.A., Medical Politics Committee; Organization and Science Committee.
May 28.—Vic. Branch, B.M.A., Council.
May 29.—S. Aust. Branch, B.M.A.
May 30.—N.S.W. Branch, B.M.A.
June 3.—Tas Branch, B.M.A., Branch and Council.
June 4.—Vic. Branch, B.M.A.
June 6.—Q. Branch, B.M.A.
June 10.—N.S.W. Branch, B.M.A., Ethics Committee.

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to *The Medical Journal of Australia* alone, unless the contrary be stated.

All communications should be addressed to "The Editor," *The Medical Journal of Australia*, B.M.A. Building, 30-34 Elizabeth Street, Sydney.

The Secretary of the Victorian Branch is endeavouring to secure copies of the issues of the *British Medical Journal* of the following dates, to complete a file for one of the members. We shall be grateful to any of our readers who has a spare copy of any of the numbers sought, if he will offer them to the Secretary of the Branch:—

1915: April 3 and 10; July 10, 17, 24, 31; August 7 and 21.
1916: July 8, August 5 and 12, November 18.
1918: Title Page and Index, Volume I. and Volume II..